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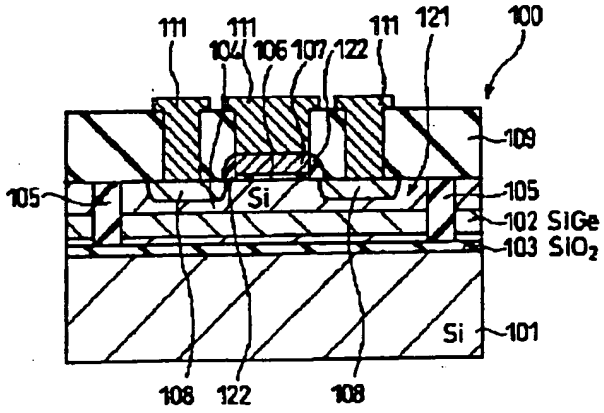
TITLE : SEMICONDUCTOR DEVICE, ITS MANUFACTURE, SEMICONDUCTOR SUBSTRATE AND ITS MANUFACTURE



ABSTRACT : PROBLEM TO BE SOLVED: To perform acceleration or the like by setting a strain application layer made of a mixed crystal semiconductor layer to the thickness of a specific range, and reducing the thickness of an Si layer between SiGe strain application layer and an SiO2 insulating layer at most to the thickness of the SiGe strain application layer, thereby setting the thickness of the strain channel layer to the critical thickness of Si of a specific value or less on the SiGe.

SOLUTION: In the semiconductor device 100, an SiGe strain application layer 102 made of an SiGe ($0 \leq x \leq 1$) and a strain Si channel layer 104 are sequentially laminated and grown on an upper surface of an Si substrate 101, and a structure having an SiO2 insulating layer 103 therein is formed at a surface layer of the substrate 101. The layer 102 of the device 10 is formed in a thickness of about 50 to 200 nm, and the thickness of the Si layer between the layer 102 and the layer 103 is set to the thickness of less of the SiGe strain application layer. Further, the thickness of the layer 104 is set to a power of about (3-2x) times of 10 as a critical thickness nm in which Si is strain grown on the SiGe.